SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

MINING ON THE PACIFIC COAST—NEVADA.

TYBO MINING DISTRICT, NYE COUNTY, NEVADA, AND THE TYBO CONSOLIDATED SILVER MINING COMPANY (LIMITED) OF LONDON—No. III.

SIR,—The period comprised between the years 1860 and 1870 will ever fill a distinguished place in the history of the mineralogical discoveries of the Pacific States and Territories. Previous to the former auspicious year there was but little known of the mineral or physical attributes of the vast region of hills and plains, mountain and valley, which stretched from the Rocky Mountains on the east to the base of the majestic Sierra Nevadas on the west. This immense tract of territory, enough to constitute an empire in itself, was then an unoccupied wilderness, and a veritable *terra incognita* to all but the hardy, adventurous trappers, who annually visited it to collect furs, &c. Some of these bold spirits at length formed settlements in these wilds, and voluntarily renounced all intercourse with civilised life to associate with the primeval occupants, and to become, as it were, the pioneers of the tide of immigration and civilisation which was so soon to follow in their wake.

Previous to the discovery of the Comstock lode, in 1860, the opinion very generally prevailed that the sterile, sage-covered wastes of Nevada were only fit for the home of the wandering predatory aboriginal, and not suited to either cultivation or occupation by the white settler. These detracting and unjust impressions were, however, soon removed. The researches and explorations which were at this time everywhere vigorously, and it might be said feverishly, pushed ahead opened the country, and brought to light the hidden wealth of its mountains and canyons. Not, however, till 1862 or 1863, when the Comstock began to put forth some evidence of the fabulous riches in both gold and silver, and which it has since then yielded annually, was there any great progress made in mining, or in the settlement of the Territory. It is true that camps were formed, mining laws promulgated, new districts discovered, towns laid out and built, yet the public mind was pervaded by uncertainty and doubt regarding the character and permanency of the mineral discoveries which had been made. Exploring and prospecting parties, however, continued to wander through the country, opening and locating as they went many of the mining districts which to-day stand prominent as bullion producers. Among the most notable of these, because being the first outside of the Comstock, was the Reese River district. This district was formed on May 10, 1862, and it included an area of 1500 square miles. A code of laws was immediately adopted, after the custom of miners, and a recorder elected, and the first claims located recorded.

After the incorporation of this district others followed in quick succession. Belmont or Philadelphia district, Gold Canyon, Columbus, Cortez, Danville, Hercules, Hot Creek, Diamond, Newark, Empire, White Pine, Eureka, Humboldt, Morey, and lastly the district from which I write—Tybo—which, as previously stated, was incorporated in the spring or summer of 1870, just 10 years after the discovery of the great Comstock lode. Many of these districts are either bordering upon or are but a few miles removed from the last-named place, to a consideration of which we will now turn from this long digression.

Tybo district was, as I have already intimated, organised in 1870, and was given a code of mining laws at the same time. It lies on the eastern and south-eastern slopes of the Hot Creek range of mountains. Hot Creek district, 12 miles distant northwards, receives its name from a rather singular stream of hot water, which flows from boiling springs in the neighbourhood, and continues its course for several miles, and then, the same as all the streams in this State, there being no outlet to the sea, suddenly sinks through the sand and alkali, to augment the waters of some subterranean stream, which perchance courses thus unseen to the ocean beyond.

The geological formation of the Tybo mining district is of porphyry and limestone, the latter of which, when first seen, and outwardly unexamined, leads the observer to suppose he is gazing upon huge rocks and cliffs of granite, so granity in appearance have the outward incrustations of the limestone become from exposure. Upon approach and examination, however, this delusion becomes quickly removed. In many places below the surface a kind of slaty stone, much resembling schist, is met with in the stratification. There is also much of the ferruginous formation met with here in the vicinity of the argentiferous galena ores, that are so largely found overlying in regular strata similar ore deposits in Eureka and other districts I have visited. These ferruginous cappings are, as a general thing, favourable to the presence of smelting or galena ores, but they are rarely or ever found to keep company with the free milling class. The porphyry and limestone course side by side in great belts or veins along the hills, and it is also no unusual thing to find encased between these porphyry and limestone formations the outcrop of a well-defined vein of silver-bearing quartz. I have seen and examined a few of these veins or lodes since I dispatched my last letter, and I am free to confess that I was agreeably surprised at their size, regularity, and richness, the assays which I had made ranging from $50 to $120 per ton, and in some instances even higher results were obtained. The smelting ores found here are chiefly of the galena and sulphuret kinds, intermixed with the red oxyde of lead, but carrying little or none of the yellow or gray carbonates which are found in Eureka, and which are so valuable for smelting, or helping to smelt, refractory ores. Free or milling ores, however, predominate in this district, and my opinion, based upon experience, is that when sufficient depth is attained, not only in the Tybo Consolidated Company's mines, but in all the others of the district, the galena and other kindred ores will cease to exist, while milling ores will take their place. Indeed, this view is nearly borne out at present, for the milling ores are increasing towards the deep in the company's mines, while there is a corresponding decrease in the smelting or galena kind.

From a series of assays made at various times of these two classes of ores, selected at random, and taken from different portions of the vein, both vertically and longitudinally, the following inspiriting results were obtained:—From six assays of the smelting ores $44·40, $46·83, $52·81, $56·42, $83·74, $75·40, or an average of $59·93 in silver, $3 in gold, and 25 per cent. in lead were obtained. But the actual working results, which I will by-and-bye give, as taken from the smelters' books, will fully establish the value of this class of ores. The milling ores could not, of course, be very satisfactorily tested, except by assay process. From the range of the following assays we can, however, readily approximate the maximum working value of this class of ore. From six assays we get $48·42, $50·40, $102·09, $46·36, $56·82, $133·49, or an average of $72·93 in silver and $3 in gold. This last class of ore carries from 4 to 8 per cent. of lead and some sulphurets, but not enough of either to hinder its being profitably milled.

This district is as yet but little known to the mining world, but is, like many others in its neighbourhood, exposing its treasures, and inviting both capital and labour to profitable employment. This section, now a wide and almost unoccupied wilderness, presents many excellent advantages for settlement to either the miner, stockman, or agriculturist, as the basis of wealth. The mountains are densely covered with pine and mahogany forests, which will furnish an unlimited supply of mining timbers and fuel. Close by is a broad and fertile valley, where a great number of farms could be located, and through whose broad expanse the proposed narrow-guage railway will pass on its course to the Colorado river. There is also an abundance of the aqueous element continually flowing from the elevated mountains which range on either side. These streams will furnish all water needful for irrigation and mining purposes, and the large population which the countless veins of richest mineral that seam the hills will at no distant day afford employment to and also furnish the ready and remunerative market for the products of the husbandman. To some persons who, not acquainted with the advantages which this section presents to the settler and miner, the above may seem an exaggerated view, but to all such I would say be patient, and await the unfoldings of the future. Salt, too, an indispensably necessary agent in the proper reduction of silver ores, can be obtained in large quantities a few miles to the south, and it can be delivered here at $40 per ton; and the capacious mill of 20 stamps which is to be erected here by the company, in connection with its mines, by the first of next May, will consume no inconsiderable amount of it. The future of this place promises to be radient and prosperous, of that there is no doubt. The good time may be delayed, but it will certainly come, for where there is a foundation for prosperity it is sure to exist. The foundation has been laid broad and deep by Nature—the rest time, money, and man will accomplish.

Now a few remarks touching the projected improvements, and the character of those which have been effected since the purchase of the property, last February, and which strongly testify to the spirit, enterprise, and confidence of its purchasers. The mines, their purchase, description, and how developed I will treat of in my next letter. The improvements carried out since last May, the time that J. B. McGee, late of the Richmond, assumed full control and direction of the property, consists of a smelting furnace, an ore house, a blacksmiths' shop, an assay office, a calcining and refining department (which, however, have not as yet been utilised, but soon will), a boarding house for the company's employees, a superintendent's dwelling, a capacious coal bin, water tanks, water ditches, tramways, &c. The smelting cupola is situated on the point of a hill at a convenient place in the canyon, at both sides of which the works and improvements are ranged. The reduction capacity each 24 hours is about 30 tons. It is circular in form above the well, and about 65 ft. from base to summit. The fall from the feeding place to the top of the well is 13 ft. in the clear, while the fall in all the Eureka furnaces is not more than 12 ft. The distance which separates it from the ore house, which stands at the outer orifice of No. 1 tunnel or adit, is spanned by a railroad in miniature, one-third of a mile in length, over which the ore is transported in cars, which hold about 3½ tons in the aggregate, to the furnace.

The engine is 30-horse power, and is constructed on the condenser principle, and the blast is supplied from one of Root's powerful blowers. This is a No. 7 blower, manufactured at the Union Iron-works, Stockton, California, and is far ahead of the Sturtevant, or any other that I have ever seen used in this State, and will concentrate wind enough to give blast to a second furnace, which is to be constructed by the approach of summer, and whose capacity is to be 60 tons. The coal line is approached by a fine grade, which had to be cut out of the solid rock, and the water is supplied from a copious spring two miles distant, from whence it is conveyed in pipes to an immense tank, whose holding capacity is 20,000 gallons, and which stands above the boiler and furnace, which are supplied from it. There is also found on an adjacent hill an admirable quality of firestone, which is used to line the furnace, and which is both durable and cheap.

The ore, as a general thing, is easily reduced, considering the small percentage of lead it contains, but this paucity has to be made up in a limestone flux, which is found in a quarry hard by, a considerable amount of which has to be used. This difficulty will, however, soon be removed. When refining or separating takes place the litharge remaining will make an excellent flux, and do away with the use and expense of lime flux.

The mill, as I have remarked, is to be a 20-stamp one, and a wet instead of a dry crusher. It, and machinery, boilers, and engine are already purchased, and when erected the entire cost will be $60,000. It will reduce about 40 tons of ore each 24 hours, thus leaving a handsome marginal profit to the company. It is to be completed and running by May 1, 1875. This mill will be a great desideratum, and the sooner it is finished the better, for there are thousands of tons of ore uncovered awaiting the action of its stamps. Its engine is 50-horse power, and its boilers and machinery are all new. A second furnace is to be erected by the same time. Grading has commenced for the mill.

J. D. POWER.

Tybo, Nye County, Nevada, Dec. 20.

AUSTRALIAN TIN MINES.

SIR,—Herewith I enclose the quantities of tin sent from the mines for the four weeks ending Nov. 7, this shows a considerable increase over the previous ones, for which I cannot suggest any reason except that perhaps drays have been plentiful to carry the tin to the railway terminus:—

QUANTITIES OF TIN SENT FROM THE AUSTRALIAN MINES DURING THE FOUR WEEKS ENDING NOVEMBER 7, 1874.

		Tons	c.	qr.	lbs.	Tons	c.	qr.	lbs.
Oct. 15	Via Warwick	87	6	3	5				
22	Ditto	97	9	1	27				
29	Ditto	124	18	2	24				
Nov. 5	Ditto	89	18	0	10 =	399	13	0	0
Oct. 17	Via Murrurundi	16	15	3	24				
24	Ditto	23	1	3	18				
31	Ditto	63	19	1	16				
Nov. 7	Ditto	66	10	3	15 =	170	8	0	17
Oct. 12	Via Grafton	30	5	0	0				
15	Ditto	32	10	0	0				
19	Ditto	7	11	0	0				
26	Ditto	25	0	0	0				
29	Ditto	34	9	0	0				
Nov. 2	Ditto	9	9	0	0				
5	Ditto	21	18	0	0 =	161	2	0	0
Total		Tons				732	3	0	17

Sydney, Nov. 20. C. E.

MINING IN QUEENSLAND.

SIR,—The tin received at the Warwick Railway Terminus during the month of October was as follows:—

Stream tin	Tons	466	4	0	20
Ingots		2	10	1	19

Equal to (say) 470 tons stream tin, a slight decrease on the previous month's receipts of about 20 tons stream tim. The welcome news by wire of a rise in your tin standard last week was badly wanted in many instances; every penny of that rise represents actual profit to the miners, but I do not think the advance is sufficient to cause as yet any increase in the yield. The temporary reduction in freight of ingots to London, mentioned in my last, has not as yet had the desired effect, as much tin ore is going to Sydney as heretofore.

The direct ships that sailed for London since my last were—Oct. 24, Harmonious, with 83 tons ingots; and Nov. 7, Corinth, with 122 tons ingots. There are three other ships on the berth nearly full, which will complete the early ships that are always dispatched to catch the London February wool sales. These ships will take the whole of the ingot tin in stock here, and their arrival in London will cause an increased quantity of ingot tin to be thrown on the market at once, and, without some explanation, might cause a drop in the standard.

The wool season here commences in September, and during October and November there are more ships dispatched to London than all the rest of the year; for two or three months previous to the first of the season's wool ships there are no ships whatever dispatched to London (as there is no loading), consequently in January and February you receive the accumulations of six or seven months tin.

In the Journal, I repeatedly see your correspondents complaining of the monopoly of tin smelting in Cornwall. So did the Queensland shippers and miners, with very good cause, but we soon blocked them. At first all our stream tin went into their hands, now, not a package of stream tin goes to London. You get our ingots of even a higher standard than the Cornwall smelters turn out, and we save from 3*l.* to 7*l.* 10s. per ton on the transaction, which lately has often been the difference of profit and loss, Cannot the Cornwall miners go and do likewise?

The two companies that are smelting on the tin fields have not as yet been very successful, as may be seen from the quantity of ingot tin received at Warwick dnring the month, but smelters are well acquainted with the difficulties and trouble to at first get a furnace to *gee*. The Palmer gold field is daiiy exhibiting fresh evidence of being rich, permanent, and extensive. There has been another rush reported, shallow sinking and very rich, while the reefs discovered are showing good prospects. The road to the Palmer from Cook's Town is now very much improved, punts and boats have been sent up by the Queensland Government, and placed at the several crossing places of the rivers and big creeks in anticipation of the coming wet season. There are a large number of bullock and horse drays now on the road between these towns conveying rations, which are now fairly supplied, as well as meat. The escort returns are increasing. The country for 50 miles inland from Cook's Town is very bad for horses, they die very fast, but at the Palmer the feed is splendid. Numbers of lucky miners have returned south from the Palmer until the wet season is over. They make their pile during the winter months, and spend the summer with their friends and families. They invariably say they intend returning as soon as the wet season is over.—*Brisbane, Nov.* 16. RESIDENT.

CAPE COPPER MINING COMPANY.

SIR,—The directors of this company having issued their usual monthly report since the date of my letter which appeared in the Supplement to last week's Journal, perhaps your correspondent, "A Shareholder," would wish to be put in possession of the latest intelligence, and which I extract from the monthly report above referred to:—

OOKIEP MINE.—Yield for November, 860 tons of 33 per cent. The sinking of the shaft has been completed to the proposed 80 fm. level, being the (at present intended) lowest level, so that this expensive and tedious operation is at an end, and the whole force heretofore employed on that work will now be available for the working of the lowest level, and the sinking of winzes to connect all the levels of the mine, and when this important work has been done it is confidently expected a vast quantity of copper ore will be developed, which will increase the reserves of the mine enormously, and tax the resources of the company for very many years in the removal of the ore. The advices as to this mine are generally favourable, and it appears the dressing of the "surface reserves" has increased to 140 tons in the month, as compared with 135 tons in October, 75 tons in September, 50 tons in August, 50 tons in July, 80 tons in June, and 80 tons in May, or in all 610 tons since this refuse ore has been economised by the use of the new machinery sent out for the purpose, and of which surface reserves there is a very large quantity, worth, as stated in my last letter, some 25*l.* a ton laid down at Swansea, and which, on reference to the annual reports, cost the company 15,000*l.* (the balance sheet attached to the last annual report shows that 6000*l.* have been written off against this 15,000*l.*, leaving 9000*l.* *only* as now standing in the books of the company for the acquisition of the "mineral rights and inferior ores," and of which the 610 tons made available formed a very small portion indeed).

SPECTAKEL MINE.—The accounts from this mine are more discouraging than usual, and I am strongly of opinion that the mine should be again abandoned, and a trifling outlay made in the way of exploration; being some 35 miles distant from the Ookiep Mine, it has always more or less interfered with the vigorous working of the principal mine—besides, it never yielded a profit of more than a few thousands a year.

TRIAL MINES.—These mines are within a radius of five miles of the principal mine, Ookiep, and probably are an extension of the latter. The reports are encouraging as to their prospects. The first reported on is—

KAROLUS BERG, of which Capt. Tonkin, mining engineer, states—"At Karolus Berg we have effected a communication between the bottom of tbe winze and the shaft. The driving produced some good stones of copper ore, and we have a small parcel—about 1 ton—of rich ore picked from the stuff."

NEW CENTRE, NEAR KILDUNCAN MINE.—Capt. Tonkin states of this mine—"We have started to drive from the end of the stope in the deepest point, and in this level we have a small branch of copper ore of good quality. This place is looking a little more promising than for some time past.

NARRAP MINE.—The mining captain states:—"The winze sinking below the 10 at Narrap yields a moderate quantity of low percentage copper ore, averaging only 7 per cent., but I lately took a stone from the deepest part of the sinking, which assayed 13 per cent."

I do not know that any further remark need be made on the monthly report, save that 1490 tons of copper ore have arrived at Swansea within the month, and that 560 tons have been put forward for sale on the 26th inst., which will bring up the sales in two months to some 60,000*l.*, and which fact may possibly add to the "guiding knowledge" your correspondent evinced such anxiety to be put in possession of, which I have endeavoured to supply him with, which, with your permission, I shall continue to afford him from time to time from the reports of the directors, which he may, perhaps, not very often see.—*London, Jan.* 15. AN INVESTOR.

ARSENIC.

SIR,—With reference to the Report by the Commissioners for enquiring into the Pollution of Rivers, a quotation from which, under the above head, appeared in last Saturday's Journal, it seems most desirable that, as recommended by them, an officer should be appointed by Government, with powers to require that the best means be taken, not only to prevent the poisoning of the air by the volatilisation of the arsenic, but also to hinder the access of the poison to running water. The Devon Great Consols Mine is referred to as manufacturing arsenic to a large extent; but there are other mines which produce, or may soon produce, nearly as much. I refer particularly to the New Great Consols (or New Consols Tin and Arsenic), the works of which it is stated will be capable of producing upwards of 150 tons of arsenic monthly; and, as it is understood these works when completed will be of the most complete description, it is to be hoped the directors of that mine, and of others similarly situated, will give special attention to the prevention of the pollution of air or water; so that an evil, which from the report of the Commissioners appears to exist, and which it is presumed it is possible to prevent, may not be aggravated by new mines, the works of which are only in course of erection.—*Jan.* 12. A. B.

THE NASCENT PROCESS.

SIR,—"A Shareholder" should endeavour to be a little less impetuous and a little more polite. Charges of ignorance and prejudice against a class of men emanating from one who is himself manifestly a novice in practical mining are, to say the least, clearly objectionable, and in the present instance certainly out of place.

"Adventurer" takes upon himself to state that no copper ores under 20 per cent. should be dressed—consequently, it is to be inferred that the whole of the dressing operations in the county of Cornwall should at once be abandoned. He also states that every ton of lodestuff broken in Crenver and Wheal Abraham will yield 1 per cent. of copper and 5 ozs. of silver. I do not happen to know the size of Crenver and Wheal Abraham lodes; but, taking them at from 4 ft. to 5 ft. wide, they would turn out from 10 to 12 tons of stuff per fathom, which at 25s. per ton would make all the lodes in the mine worth for silver alone from 12*l.* to 15*l.* per fathom from bottom to top, and all the burrows into the bargain.

Again, speaking of the New Great Consols, "Adventurer" says that 60 tons of stuff will yield from 45*l.* to 50*l.* in copper and 75*l.* in silver, making together at least 120*l.*, or 2*l.* per ton; and, as the New Great Consols lode from published reports appears to be 8 ft. and 10 ft. wide, and in places more than this, it follows that it will yield from 15 to 20 tons per fathom, which at 2*l.* per ton would give from 30*l.* to 40*l.* per fathom for silver and copper throughout the mine.

So much having been written concerning the riches of New Great Consols, and these reports having continued for such a length of time, it may not be amiss to refer by way of curiosity to one published in the Journal in January, 1874, in which the total value of the lode for tin in the shaft, ends, and stopes amounted to 482*l.* per fathom, with a lode going down in the bottom of the mine worth 55*l.* per fathom for the part carried in the shaft. Going still further back, to November, 1872, a correspondent writes also to the Journal that "with an equal number of stamps-heads the returns would, doubtless, exceed those of Dolcoath, the contents of the lodes being richer, the percentage of tin being higher."

Bearing in mind these statements, "Adventurer" must really pardon your readers if they venture to look for testimony somewhat

more practical than his own before relying implicitly on the dubious theory he so freely propounds. ANOTHER MINE AGENT.
Jan. 12.

SUCCESSFUL AND UNSUCCESSFUL MINING.

SIR,—WASTE OF MONEY AT SURFACE.—1. Adopting untried inventions and alterations and the consequent expense necessarily attached, as every patentee does not stake the pecuniary results on the efficiency of the machine.

2. Erection of machinery without it being called in requisition, as is evidenced in many localities; and the conclusion of numerous reports often raise the risibilities, thus—"All the necessary plant is erected, and all that we want is a good lode." A child grows more when disencumbered of a "dozen suits of clothes," to say nothing of the expense, trouble, and deterioration of the same.

3. Waste of capital has been manifested in the laying out of dressing-floors. I could point to a case where floors have been placed on the top of a hill, and the only perceptible advantage gained is the having to raise the tinstuff 20 feet high by means of steam-power, when it could have been placed in the side of the hill and saved many inconveniences. Disjointed floors are also a source of waste, as scores of fathoms of launders, &c., would be saved, the ore would not stray into so many forbidden paths, the agent sees his work better, and the shareholders comprise the whole at a glance. In visiting a mine a few days since I thought the stamps well situated, but the floors everywhere and nowhere, and the idea conveyed was that one of the heavenly bodies, instead of throwing off meteoric stones, must have cast off buddles, frames, &c., and that this must have been the place of their descent, or that volcanic agency was the cause of such disrupture. Many mines pay from 5000*l.* to 8000*l.* for laying out machinery to dress 5 or 6 tons of tin per month, whereas many streamers on an outlay of 2000*l.* to 4000*l.* manage to get 7 or 8 tons of tin per month, which tin the mine cannot render marketable on account of the complicated machinery used in its extraction.

4. AGENCIES.—The writer could point to a mine where for eight months the local agencies were more than the labour cost, not to mention the expenses of the London office in connection with the same, and can refer to another mine where two agents and a clerk are in daily attendance to superintend 100 men, *minus* 84.

5. Horse labour varies considerably. In one mine a small boy with a crippled horse earns 6*s.* per day by drawing 4 cwt. 10 miles; whereas at another mine in proximity the horse has to draw 6 cwt. 14 miles for 5*s.*

6. Account-house expenses were formerly considerable, as some agents were allowed the privilege of keeping a pack of hounds, and of paying the wages and defraying the expenses of noted wrestlers, but such "good old days" are for ever past, and it is a matter for congratulation that now in a call-paying mine only nine gallons of spirits are charged monthly, that barrels of rum are charged as barrels of grease or oil, that the sumpmen's house in another mine is converted into a cellar fitted to receive 16 or 17 dozen bottles, and could enumerate others where the postboys are in daily attendance at the publichouse; and another where gin has been drank from the "little black teapot." Time fails us to glance even cursorily at the good-tempered, pleasant, kind, and genial disposition of the matron in charge of the account-house, with her lackeys, or of the doubly-hard and overworked "clerk of the works." EDWARD SKEWIS.
Moore Farm, Plympton St. Mary, Devon, Jan. 7.

P.S.—Mr. Clarke, I am no agent, neither officially connected with any mine, and it is not my intention to vituperate any class, much less the mining agents, from whom I have received naught but kindness and civility, but my object is to feeby adumbrate the avoidable evils of mining. E. S.

SUCCESSFUL AND UNSUCCESSFUL MINING.

SIR,—In last week's Journal I observe a letter signed Edward Skewis and one signed S. Clarke, treating on mining and the causes of its being often prosecuted unsuccessfuly. This is a subject of very great importance, and no one who is not intimately acquainted with all the many phases, all the ramifications, and every department of metalliferous mining should attempt to deal with it. Mr. S. Clarke seems to be decidedly and strongly opposed to Mr. Skewis's remarks in a former letter, and his basis appears to be the old story, that if the blind lead the blind both come to grief. I do not for a moment intend to support him in his opposition, because in my opinion any gentleman writing for the public should be above personalities. If Mr. Clarke cannot agree with Mr. Skewis's remarks he should confute them, and not impugn his knowledge or judgment, but point out his error.

One of our greatest living statesmen has stated that the critics are men who have failed in science and art. This being the case, Mr. Skewis, even if he has been mistaken in judgment, as Mr. Clarke insinuates, is simply in the position of critics in general, and is not in the least degree disqualified from forming as correct, or even a more correct, opinion on mining than those who have never erred, if there are any such, and whose lives have been subject to no vicissitudes.

The subject Mr. Skewis has taken in hand is capable of being very fully worked out, but it is one that requires no ordinary amount of care, thought, and observation. In his letter of last week (No. II.) I cannot agree with him on many points, and to leave statements which convey wrong ideas to go unchallenged and unnoticed would be unfair and unjust to the mining public. There is one fact that explains very much in reference to the development of only 30 or 40 fms. in depth in many of our mines, which is that there is a limit to the patience as well as to the money of adventurers in trial mine; that after years of working, during which time, owing to the hardness of the rock, only perhaps a few "paltry fathoms" have been developed, those who at the outset were led to expect great things in the way of quick returns, finding their hopes are not being realised, abandon one after another all connection with the mine, until all the works are stopped. Who has not heard of the proverb, "Hope deferred maketh the heart sick?" If, then, at the beginning such promises were not made *real*, honest mining would have a much better chance. Mr. Skewis, connected as he is with mining, ought to know that it would be quite a mistake to place a large force to work on a trial mine, where the majority, or perhaps the whole, of the operations are carried on in "dead" ground, and that in such a case, of all others, the utmost caution is necessary. Then Mr. Skewis asks in very metaphoric language, "Why are are not the hidden measures disclosed, why are not the noble (?) metals laid open to our gaze, and why is not the long-neglected diamond on Golconda's shore (*i.e.*, copper and tin in Cornish mines, if I understand it aright) disengaged from its impurities?" and then goes on to state the causes. The old adage "What is worth doing must be done slow-ly," supplies him with the basis for his first cause or reason, but afterwards, in contradiction of this, he advocates a much faster rate of working, stating that if 100 men were employed in many places where only a dozen or more are at present working we should meet with more success. If work that is worth doing must be done slowly as he asserts, then 12 men working at an advantage are to be preferred to 100 working in cramped places, where space is insufficient for air. The ancients did well in their shoal workings, but what was accomplished was under circumstances far different to the present, and I think, although commendable in itself, not an example to be emulated in deep mining.

I opine that some of the causes why mining is not more successful may be—1. That the mineral being of too low a quality to pay the dressing cost at the present prices is nevertheless sent to the stamps without a previous assay being made. This is one of the most common errors. The value of every parcel of tinstuff should be ascertained before sending it to the stamps, so that if of a very low produce it might be thrown away as waste.—2. That there is not enough of energy displayed among the agents in overlooking the men underground.—3. That many mines (modern ones) set afloat without even a remote chance of success are still being worked year after year, when a shareholder gets disheartened, obliging brokers relieve him of the burden, and transfer it to those less experienced. So the mine goes on, never progressing, always going to be rich; till at last it will sink into an ignominious grave, after impoverishing its owners, and profitable only to its promoters, its staff, and the brokers. These all can be avoided—are preventible causes. Mining should be carried on with spirit, and although Mr. Skewis's examples admit of a better selection, I think I quite agree with him in this. My object in writing is not to please any party, not to worry any party, and if I "tread on anyone's toes" I do it inadvertently. In writing war, and war to the death, should be waged not against individuals, but against systems—rotten, delusive, ruinous systems—destructive to the interest they pretend to foster.
Jan. 7. A CORNISHMAN.

MINING AUCTIONS.

SIR,—In these times, when tin is at a low price, mines flooded with water, and shareholders are frequently asked to subscribe more capital, it behoves everyone connected with mining in Cornwall to do his best for the interests of mining as a whole. But, instead of this, I find one particular class of persons—namely, the auctioneers who are called in to sell the machinery and materials when a mine is abandoned—to be putting new imposts upon the purchasers at such sales, and from which they have, of course, to allow for in making their bids, so that the purchase-money falls far short of what it ought to. The usual conditions now are 1¼ to 1½ per cent. lot money on engines, 2½ per cent. on pitwork (provided the value of each lot sold exceeds a certain sum (say, 10*l.* or 20*l.*), and 5 per cent. on all timber, including, of course, such trifling articles as the shears, the capstans, and the balance-bobs. But, not content with this, 5 per cent. is now charged on all pitwork, even if the purchaser buys heavily, provided that each ssparate lot does not come up to the specified sum. Of course, with such exorbitant charges, the auctioneer's fees amount to something pretty good, and it is not unusual for an auctioneer at a mine sale to net 30*l.* or 40*l.* for his day's work. When I say his day's work I speak advisedly, for it is but very seldom he condescends to honour the mine with a visit either before the sale comes on or after it is over.

The agent of the mine has frequently to arrange the sale, lot the goods, and make out the whole list, which the auctioneer copies into his sale-book by about one hour's work before he proceeds to knock down the lots. The weighing off of the goods the agent does also. So that Mr. Going-Gone finishes his work with the last fall of the hammer. It is said, however, by evil-disposed persons that this does not exactly finish up all the auctioneer does in some instances, and that an arrangement is sometimes entered into, whereby the solicitor or other person authorising the sale divides the fees with the auctioneer. Now, it is evident that this system is a rotten one, and the precedent established by the Stannaries Court of paying the auctioneer a fixed sum for his day's work, and levying no lot-money whatever, ought to be substituted in all cases. It is quite bad enough for the shareholders in a mine to find their capital has been lost, but doubly worse when "black mail" is levied in this way upon the materials, which are looked upon as the only chance (although a small one) of the shareholders ever getting anything back in the shape of a dividend. A SHAREHOLDER IN MINES.

TOLBENNEY IRON MINE, ST. STEPHEN'S, CORNWALL.

SIR,—A short time ago the above mine was sold to a private gentleman for about 1300*l.* cash. Since that time machinery for pumping, drawing, and pitwork has been provided, tram and skip roads layed, and the engine-shaft sunk 16 fathoms on the course of the lode. Ore raised and brought to surface about 150 tons in quantity, which is now lying on the floor, and not 1 ton of it has been sold. About two months ago the proprietor sold the mine back again to the former party for less than 400*l.*, after spending in purchase money and in the mine between 2000*l.* and 3000*l.* The purchasers are now reported to be in treaty for the sale of the mine and materials for a very large sum. My advice to the intending purchasers is to look carefully into the matter for their own sakes and the benefit of mining generally. There is no reason why full details of the working cost, with every particular as to the nature and value of the ore raised, should not be furnished for the satisfaction of all parties. I have no doubt but that the late manager is well acquainted with the whole facts; he being a very respectable person he would not allow his employer to sacrifice a good mine and loose such a large sum of money. I fear, however, that the ore is unbottomed in the mine, or that it is worthless after being raised. Purchasers of mines would do better if they employed practical mine agents to examine the mines for them, those who understand the ore as well as the working part, and would not allow their dignity to be tampered with by a paltry few pounds. He should be independent of sellers and the district. There are plenty of gentlemen willing to speculate if mines were carried on more legitimately.
St. Stephen's, Jan. 12. OLD MINER.

NEW GREAT CONSOLS.

SIR,—I think there is some doubt whether your correspondent, "Shareholder," who has been writing about Crenver and Wheal Abraham and the Nascent process, is really a shareholder in those mines, and whether his object in writing is really for the benefit of mines. He is so ardent in his advocacy of the Nascent process that he is inclined to charge mine agents with folly who do not immediately adopt it, at least in such mines as Crenver and Wheal Abraham. I have not a word to say against that process. From what I hear it appears to be a valuable adjunct to the modes of separation of metals from their debris, but I dissent from your correspondent's statement that the ores of New Great Consols would never yield a dividend without that process. I know the mine and the size and quality of the main lode, and am justified in saying that the product of that lode alone would have given a good profit, independently of that process of extraction, if Capt. R. Pryor had been permitted to augment the stamping power to the extent of 100 heads. Of course, by the process referred to the profit would be enhanced.

I anticipate a prosperous future for New Great Consols. There has been a large, but necessary, outlay in the extensive metallurgical erections for increasing the returns, but I understand that the limit of such outlay has been nearly reached, so that after a few months we may look out for declaration of dividends.
Jan. 13. R. SYMONS.

NEW WEST ROSEWARNE MINE.

SIR,—It affords myself and several fellow-shareholders much pleasure to find from the Chairman's letter in the *Mining Journal* of Saturday last, that the directors have at length determined to dispose of this mine and machinery by auction. We now trust to be relieved of a disagreeable duty. Had the directors adopted this course earlier we think they would have better consulted their own dignity and the interests of the shareholders than by permitting the executive to attempt to enforce, by legal threats, the payment of an unnecessary call.

What we most complain of in no way reflects on the Chairman, in whom we have the greatest confidence, and can endorse every word of the high opinion he has expressed as to the value of the property. Unhappily, there are matters of which he is not cognisant, and, therefore, not responsible for them. Still, we think Leeds shaft ought not to have been abandoned, for on the resumption of operations at this point—the key to the mine—the agent stated that the lode could be reached in about a month. If the lode could have been cut in a month, why was this point abandoned? Or why was it not reached after several months' additional operations? If this was not "mismanagement" it looks very like a strange error in judgment. But a stranger feature still is that of the executive in applying for only one call when two were owing, and in acknowledging the receipt of a cheque for this one call, admitted their error, and asked for the second call. I at once explained to them, by letter, that as the mine had been stopped, and was about to be sold, there was no need for this second call, inasmuch as the machinery alone ought to realise enough to discharge all liabilities. They then, through their solicitor, under threat of legal proceedings, applied for both calls—the one for which I already held their receipt, and the other, which I had declined and still decline to pay for the reasons herein stated. Although I have only a small interest in this company yet I hold upwards of 1000 shares in different mines, but have never experienced such financial "bungling."

Further, we do not think that small holders ought to be despised, for in our opinion the worst enemies to the Cost-book System are the large holders who are unable to meet their calls. The Chairman's letter goes very far to enforce this view. Had the agencies been cashiered 12 months ago, instead of being merely cautioned, we think that the mine under a more energetic executive would have been a dividend concern rather than a failure. GEORGE HEAP.
Beresford-road, Highbury New Park, Jan. 13.

THE CLEE HILL COLLIERY COMPANY.

SIR,—The determined manner in which the directors have withheld a meeting of the shareholders for nearly two years is quite sufficient to show that something is wrong in the company's affairs, but as the publication of complaints have no other effect than to depreciate the property, I beg you will permit me, through the medium of the Journal, to urge my fellow-shareholders not to ventilate their grievances through the press, but to take some more certain action to save their property from the utter collapse which at present seems to threaten it. I would, therefore, briefly suggest that some proprietor who may have time at disposal communicate with the general body of shareholders, and so obtain their authority for a meeting to be called at once, so that the company's affairs may be investigated and, if possible, rectified ere it is too late, which would further put an end to the numerous complaints which reach you from time to time, as your columns show. The trouble a shareholder would be put to in demanding a meeting would I am sure be fully acknowledged, and all expenses paid the first time the proprietors were brought together. I hope my suggestion will lead to some decided action being taken at once.—*Jan.* 12. MILITAIRE.

THE CLEE HILL COLLIERY COMPANY.

SIR,—I quite agree with your correspondent, "Rusticus," in last week's Journal, "that some steps should be taken to improve the value of our property." About three months ago it was stated in the Journal that a correspondent had called attention to there being no list of Clee Hill shareholders to be found at Serjeants' Inn, although the company was registered in 1872. It was also stated about the same time that from enquiries you had made about the delay in holding a meeting of shareholders, &c., that it was put off until the colliery was in an improved condition, and would very soon be held, the Companies Acts requiring a meeting of shareholders to be held in every year. Allow me to ask why that meeting has not been held? Is it not a direct violation of the Companies Acts, or have the company so much money in hand that they can afford to wink at the law? If so I should be very much obliged if they would send a good dividend to—
— A DISSATISFIED SHAREHOLDER.

VALUE OF MINES—THE JAVALI.

SIR,—The price quoted for shares in the Javali Mine in the Journal of Jan. 2 was ⅛ to ¾. As there are less than 22,500 shares issued, this would show the market value of that mine to be 2800*l.* to 8400*l.* The monthly profits average over 500*l.* Surely, therefore, those who are obliged to sell their shares at such a depreciation are indeed unfortunate. On re-perusing the report of the last meeting of the shareholders I find it stated that Capt. Sohns, the manager of the mine, had on his arrival in this country immediately purchased 300 shares at the then better market price, and said the Javali shares ought to be at as high a premium as the St. John del Rey. Will any of your correspondents kindly account for the present low prices?—*Coventry, Jan.* 13. A PUZZLED SHAREHOLDER.

[For remainder of Original Correspondence, see to-day's Journal.]

FOREIGN MINING AND METALLURGY.

The Engineer in Chief of Mines in the province of Hainaut has published, rather late in the day, a very interesting report on the progress of the mining industry of that province in 1873. It appears that the total production of coal in the Hainaut in 1873 was 11,652,953 tons, of the estimated value of 10,211,063*l.* The coal production of the Hainaut has been steadily increasing during the last few years. In 1860, it amounted to 7,506,720 tons; in 1864, to 8,670,372 tons; in 1867, to 9,595,280 tons; and in 1870, to 10,196,230 tons. An increase of 4,146,283 tons was thus established in 13 years. The lowest average selling price (8*s.* per ton) prevailed in 1864, and the highest (17*s.* 6*d.*) in 1873. The number of workmen employed in coal mining in the Hainaut in 1873 was 79,556, or 5873 more than in 1872. The average wages paid per man was 56*l.* 5*s.* in 1873—a total showing an increase of 14*l.* 5*s.* per man, as compared with 1872. The aggregate amount paid away in wages in the Hainaut in 1873 was 4,475,636*l.*

The Engineer in Chief further estimates that the total outlay attending the production of coal in the Hainaut in 1873 was 7,596,647*l.*, so that the average cost price was 13*s.* 1*d.* per ton. At this rate the average profit realised for 1873 was about 4*s.* 8*d.* per ton. The average production of coal effected by each workman employed in coal mining industry in the Hainaut in 1873 was 146 tons; this average showed a reduction of 11 tons when compared with the corresponding figures for 1873. Thus, while the Hainaut coal miner received higher wages last year he did less work. Nevertheless, the Engineer in Chief estimates the profits realised by the colliery proprietors of the Hainaut in 1873 at 2,614,396*l.*, or 1,592,000*l.* more than in 1872, and this notwithstanding an augmentation of more than 360,000*l.* in the expenses. The total production of 1873 was divided among the three arrondisements as follows:—Charleroi, 6,614,500 tons; Mons, 4,957,453 tons; and Tournai, 81,000 tons. The deliveries from the Couchant de Mons alone remained below those of the preceding year. The total extraction in 1873 presented an increase of 36,787 tons as compared with 1872. During 1873 the collieries of the province had 202 pits in activity, of an average depth of 1433 ft. The number of extraction engines at work in the Hainaut in 1873 was 292; the number of drainage engines was 110; and the number of ventilating engines 257. The province possesses 443 miscellaneous steam engines. The aggregate steam force utilised by the collieries of the province of Hainaut in 1873 was 62,730-horse power. The total coal production of all Belgium having amounted in 1873 to 15,778,400 tons, it results that the extraction of the Hainaut amounted to three times that of all the rest of the country. Thus the extraction of the province of Liége in 1873 was 3,674,578 tons, while that of the province of Namur was only 450,870 tons. As regards the current features of the Belgian coal trade there is very little change to report. In the Charleroi basin prices remain at their highest point.

Questions relating to wages, transport, and cheap raw materials must take precedence of all others, and find without delay a satisfactory solution, unless we are to witness a prolonged stagnation of metallurgical industry in Belgium. The Brussels Coal and Metal Bourse has just held its annual meeting. The number of syndics was increased at this meeting to 18; all the members of the old bureau were re-elected, with the addition of two more representatives of the province of Liége—MM. Eugène Sadoine and Charles Beer. No important transaction has been noted during the last few days, unless it be a contract for 8000 tons of steel rails, which has been obtained by the Seraing Works on Italian account. Prices remain feeble and indecisive. The hopes of the manufacturers of rolling stock in Belgium have been slightly revived by a rumour that the Administration of the Belgian State lines intends shortly to let contracts for 2000 trucks. This rumour requires confirmation.

The continental copper markets have generally remained unchanged. At Paris, Chilian copper in bars, delivered at Havre, has made 90*l.*; ditto ordinary descriptions, 87*l.* to 88*l.*; ditto in ingots, 92*l.*; English tough cake, 92*l.*; and Corocoro minerals (pure copper), 88*l.* per ton. At Marseilles, Spanish in plates has realised 90*l.*, and small refined ingots 92*l.* per ton. At Rotterdam, Drontheim has realised 50 fl. to 52 fl., and Russian Crown 51 fl. Tin has generally been firm. At Rotterdam, Banca cannot be obtained below 58¼ fl., although transactions have been comparatively small. As regards Billiton tin there have been some rather considerable transactions in Holland, as well in disposable lots as in parcels for future delivery; prices have advanced from 55¼ fl. to 55¾ fl. At Paris, Banca, delivered at Havre or Paris, has made 105*l.*; Straits, delivered at Havre or Paris, 100*l.*; and English, delivered at Havre or Rouen, 100*l.* per ton. The tone of the lead markets has been good, although transactions have been inconsiderable. At Paris, French lead, delivered at Paris, has made 23*l.* 12*s.*; Spanish ditto, delivered at Havre, 23*l.* 8*s.*; and Belgian and German, delivered at Paris, 23*l.* 16*s.* per ton. Zinc has generally exhibited a good tone; at Marseilles rolled Vieille Montagne for consumption has brought 32*l.* per ton, with a discount of 3 per cent.

The attention of Russian capitalists is just now being specially directed towards the development of that vast empire, and advices from St. Petersburg state that a scheme has been put forward for the construction of a railway to traverse the whole of the great coal basin of the Donetz, and so form a connecting link between several of the lines which radiate from the sea to the centre and west of Russia. This railway will, if completed, enable the mine proprietors of the valley of the Donetz not only to supply their own railway system with coal, but also give them cheap and direct communication with the sea coast, whence shipment to Egypt and the seaports of the Mediterranean will be easy. The coal fields of the Donetz district are stated to be practically inexhaustible, and as iron is also found in plenty, large manufacturing works will probably be rapidly developed.

EXTENSION OF THE NORTH STAFFORDSHIRE COAL FIELD.

THE FLORENCE COLLIERY, AND THE NEW ROBEY MINING ENGINE.

Florence Colliery, the property of His Grace the Duke of Sutherland, is situated on the south-eastern side of the town of Longton, and adjoins what has hitherto been considered the south-eastern boundary of the North Staffordshire coal field, and is separated from the latter by a large fault, the full extent and bearings of which have not yet been ascertained. Previous to 1872 this fault was considered the limit of the workable measures in the Longton district. At the beginning of that year, however, the discovery of the out cropping of thin coals, marls, and fire-clays—true coal measure strata—determined His Grace to prove the field fully. A boring was immediately commenced, and carried to the depth of 245 yards with favourable results. At 98 yards a thin coal was met with, and immediately beneath it a lean ironstone 2 ft. 6 in. thick. At 125 yards another thin coal. At 178 yards a seam of coal 3 ft. thick. At 197 yards a series of eight bands of ironstone, and after several other thin seams of coal and ironstone a seam of coal was reached at 243 yards 13 feet thick. This was considered sufficient conclusive evidence to justify the commencement of sinking pits, the first sod of which was cut in June last, and two shafts 12 ft. 6 in. diameter and 14 ft. respectively have now been pushed to a depth of 60 yards. On the commencement of the sinking the Duke of Sutherland considered all the varieties of engines used for sinking purposes, and ultimately selected as the best the new Robey mining engine, the general character of which has already been described in the Journal.

The weekly output of coal on the Duke of Sutherland's Staffordshire estate is at present about 2000 tons. How far this will be increased by the workings in the new field, of course, cannot be estimated. The successful borings made on the Duke's estates, however, extend over many acres, and the coal supply is not, of course, likely to stop short at the boundaries of the Trentham estate. These pits at Florence Colliery have been laid out to command an area of from 500 to 600 acres. The Duke of Sutherland has not only been fortunate in his discovery of new coal and ironstone measures. About 12 months ago an interesting discovery was made in one of his pits in the Longton field of a spring of petroleum, which is now yielding that valuable product at the rate of 100 tons per annum. The works upon the estate now also include the cutting of a short line of railway, which will connect the Florence Colliery and the other mines and tileworks on the estate with the London and North-Western and North Staffordshire systems. The undertaking has now so far advanced that on Friday last a number of engineers and others were invited to witness the working of the new engine. It is of 50-horse power nominal, though capable of developing 200-horse power. The general arrangement is similar to a locomotive, only, instead of the wrought-iron base-plate, the engine is erected on a massive cast-iron base-plate. This base-plate is formed at one end into an ashpit, with damper doors, and is made suitable for receiving the fire-box end of the boiler, the other end of which is carried by a crutch-shaped casting, fixed over the cylinders. The end of the base-plate under the cylinder is formed into a feed-water tank, into which the cylinder cocks discharge all condensed water, and into which a portion of the exhausted is so directed as to heat the feed-water to nearly boiling point before going into the boiler. The boiler is securely bolted to the cylinder at the smoke-box end, the fire-box being carried on small rollers; it is thus free to expand on steam being got up, no strain being put on either plates or joints.

Upon the base-plate also are fixed the iron bearings for the winding-drums, as well as the fixing for the brake, and reversing and starting lever. Two brakes are fixed to the engine—one to the fly-wheel, which is the one ordinarily used, and an extra one of great power round the drum itself. The whole of the parts of both engine and boiler being included on one foundation or base-plate, heavy and expensive foundations are dispensed with; the weight of the boiler and its contained water acting as an extra weight to assist in keeping the whole machinery in rigid position. The whole of the levers for working engine and winding-gear are brought conveniently together near the fire-box, so that one man can attend to both driving and stoking. The engine has two 16-in. cylinders with 24-in. stroke; the crank-shaft is bent out of one piece of Lowmoor iron, and 6¾ in. diameter; the drum-shaft is of the best scrap-iron, 10 in. diameter; the drum is 9 ft. diameter and 6 ft. wide, having cast-iron ends lagged with best English oak. The boiler is 10 ft. 10 in. long and 4 ft. 9 in. diameter, and the fire-box 5 ft. 9 in. long by 4 ft. 9 in. wide. There are 74 tubes 3 in. diameter, and working pressure is 100 lbs. to the square inch. Amongst the advantages possessed by this class of engine over the ordinary fixed engines with Cornish or egg-ended boilers may be mentioned the very slight foundations required, and their being no brick chimney. The engine running at a high speed relatively to the load there is much less risk of over-winding, the whole machinery is more thoroughly under control, and can be started, reversed, or stopped in any position with the greatest ease, and all the levers being conveniently near to the fire-door one man is enabled to attend to both stoking and driving. There is great economy of fuel, because the locomotive type of boiler employed will evaporate about 20 per cent. more water per lb. of coal than the Cornish or egg-ended, and there is no loss due to leakage or radiation from steam-pipe and other large surfaces. The boiler, working with an artificially strong draught, an inferior, and therefore cheaper, class of fuel can be used. The engine parts are fitted up with all modern improvements, the cylinders are steam jacketted, and the link motion can be used as an effective expansion gear. The result of the whole being an economy of fuel, as proved by actual comparison with the old type of engine doing the same work of from 10 to 50 per cent. The engine, which is the invention of Mr. John Richardson, the engineer to the firm, was only patented about twelve months since, yet 30 are already in use, and giving the utmost satisfaction.

After the inspection, about 70 of the visitors accepted the invitation of Messrs. Robey and Co. to a luncheon at the Trentham Inn. The chair was taken by Dr. S. Lowe, chairman of the company, who supplied the engine; and the vice-chairs by Mr. F. Clench, manager of the company's works, and Mr. G. Menzies. The chairman was supported right and left by Messrs. C. M. Campbell, M.P., C. J. Homer, Pendred, and Udall; whilst about the middle of each table Mr. John Richardson, engineer, and Mr. T. Bell, the secretary to the same company, did their utmost to entertain the guests. In responding to the toast of "The Duke of Sutherland," proposed by Dr. LOWE, Mr. MENZIES regretted the cause of his Grace's absence, and said it was always a source of pleasure and satisfaction to him to help forward a good work, in whatever direction it lay. He concluded by proposing "Success to Messrs. Robey and Co.," complimenting them upon their enterprise, and trusting that they would long continue to further develope and improve that wonderful power in civilisation—the steam-engine.——Mr. CLENCH returned thanks on behalf of Messrs. Robey and Co., and said that hitherto their attention had, in the main, been given to engines on the surface of the earth. They had now to show what they could do in the way of putting engines into the bowels of the earth. He thought that poor horses and ponies should no longer be made to pass their lives underground. He also thought that more attention might be given with advantage to compressed air as a power, which might be turned to account in developing their minerals.

Mr. C. J. HOMER, in responding to the toast "The Mining Interests of North Staffordshire, and the North Staffordshire Institute of Mining Engineers," referring to the works of Mr. Udall, said they were being carried out in such a way that they reflected the greatest possible credit on all concerned. With regard to North Staffordshire he thought it would hold its own with the world, and it only wanted to be known to be appreciated. He was sorry Mr. Bromley's name was not associated with Mr. Menzies in the first toast. He thought from the manner in which the work at Lightwood was being carried out there was not the shadow of a doubt as to the future results. He then referred to the increase in the coal trade, and regretted the pottery trade was not so good as formerly. He wished that his friend Mr. Crampton could see his way to introduce some of his inventions into the district, and use up a portion of their coal dust. He thought Mr. Crampton's name should have been mentioned with the toast, and begged to give it.——Mr. CRAMPTON briefly replied; and Mr. J. G. BAKEWELL then gave the health of Mr. Bromley, the Duke of Sutherland's mineral agent.——Mr. BROMLEY briefly returned thanks.

Mr. C. M. CAMPBELL, next proposed "The Chairman." He humorously referred to Mr. Homer's remarks respecting the falling off of the potting trade, and said he stood before them in a threefold capacity. First, as being connected with the potting trade, which he contended was in the ascendant; next, as a representative of North Staffordshire, and he assured them the mining interests should always have his attention; and third, as chairman of the North Staffordshire Railway. In the latter capacity he held a certain amount of power in his hands to develope or retard the mining interests, but he could only say that holding that position he felt it his duty and pleasure to promote the interests of the North Staffordshire coalowners as much as possible. The "Health of the Chairman," which was drunk with much cordiality, brought the proceedings to a close.

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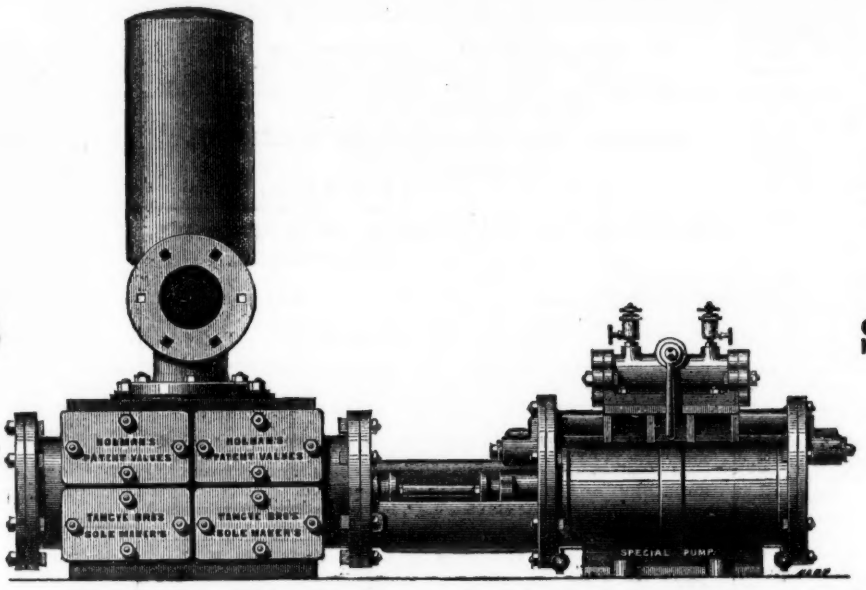

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Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4	5	6	7	8	5	6	7	8	9	5	6
Length of Stroke .....In.	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18	24	12	12
Gallons per hour	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000	5070	7330	9750	13,000	16,519	5070	7330
Price .....£	**16**	**18**	**20**	**25**	**22 10**	**27 10**	**32 10**	**25**	**30**	**35**	**40**	**30**	**35**	**40**	**45**	**50**	**40**	**45**	**50**	**55**	**65**	**50**	**55**	**60**	**70**	**85**	**55**	**60**

CONTINUED.

Diameter of Steam Cylinder..In.	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18	18			
Diameter of Water Cylinder..In.	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12	14			
Length of Stroke .....In.	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24			
Gallons per hour	9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000	40,000			
Price .....£	**55**	**75**	**90**	**100**	**75**	**80**	**85**	**110**	**120**	**140**	**110**	**120**	**130**	**140**	**160**	**180**	**140**	**150**	**160**	**180**	**200**	**190**	**200**	**220**	**240**			

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long piston of the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of suction and delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

The "Special" Steam Pumps can be worked by Compressed Air as well as by Steam.

HUNDREDS of these PUMPS are USED for HIGH LIFTS IN MINES, for which purpose they are made with 21, 24, 26, 28, 30, and 32-inch Steam Cylinders, and 36, 48, and 72-inch Strokes.

HOLMAN'S

PATENT SELF-ACTING EXHAUST STEAM CONDENSERS,

FOR ALL KINDS OF STEAM PUMPS AND HIGH-PRESSURE STEAM ENGINES.

TURNS WASTE STEAM INTO GREAT POWER.

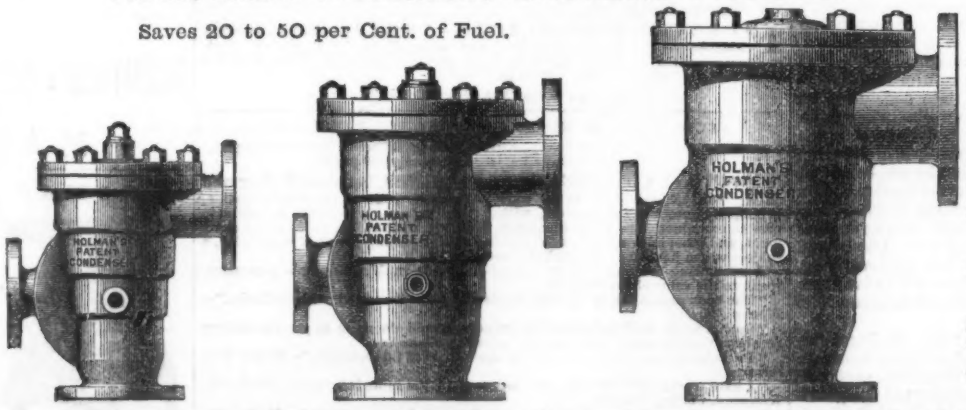
REQUIRES NO THREE-WAY COCKS, CHECK, or REGULATING VALVES.

SAVES HALF ITS COST IN PIPES AND CONNECTIONS.

PREVENTS ALL ESCAPE OF STEAM IN MINES OR ELSEWHERE.

REQUIRES NO EXTRA SPACE.

Saves 20 to 50 per Cent. of Fuel.



These Condensers are made to suit any size and kind of Steam Pump. They form a part of the suction pipe of the Pump, and while they effectually condense the exhaust steam, they produce an average vacuum of 10 lbs. per square inch on the steam piston, increasing the duty of the Engine, and effecting a saving in fuel of from 20 to 50 per cent.

In Mining operations these Condensers will be of great value.

All Boiler Feeders are recommended to be fitted with these Condensers, as not only is the exhaust steam utilised in heating the feed water, but is returned with it into the boiler.

The following Testimonial gives one Example of the Power Gained by the action of Holman's Patent Condensers:—

MORLEY COLLIERY, WIGAN, October 16th, 1874.

Messrs. TANGYE BROTHERS AND HOLMAN.

GENTLEMEN,—I have great pleasure in recording my entire satisfaction with the working of the Holman's Patent Steam Pump Condenser which you have supplied to us. The complete condensation of the steam is, apart from its value in the strict economic sense, a most valuable feature in the drainage of underground workings. The perfect manner in which this important result is accomplished by your Condenser is extremely creditable to you, and merits the thanks and commendation of the Mining Engineer. When we start the "Special" Steam Pump the Condenser commences working automatically, and maintains a constant vacuum of 10¾ lbs. per square inch, even when we run the Pump upwards of 80 strokes (106 feet) per minute. It may perhaps be interesting to you to know that when we were running the Pump at 84 strokes (168 feet) per minute, the steam gauge indicating a steam pressure of 36 lbs. per square inch, 80 yards from the Pump, and the Condenser vacuum gauge on the exhaust pipe indicating a steady vacuum of 21½ inches, I turned the exhaust steam from the Condenser into the atmosphere, when the speed at once fell to 44 strokes per minute. The working economy thus shown is really so great that the cost of the Condenser must be saved in a very short time. (Signed) J. THOMPSON.

Price from 30s. to 40s. per inch diameter of Steam Cylinder, according to the relative Diameter of Pump for which Condenser is required.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their offices, 26, FLEET STREET, E.C. where all communications are requested to be addressed. January 16, 1875.